

TWO NEW SPECIES OF CARALLUMA FROM SOUTH WESTERN ARABIA

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(With Plates VII and VIII)

Caralluma meintjesiana Lavranos nov. sp. affinis *C. chrysostephanæ* (Deflers) Berger et *C. Luntii* N. E. Brown sed ab illas corolla papillata ne pubescente, luteo-viridi, lobis coronæ interioris cornu dorsali munitis distinguitur; affinis *C. eremastrium* O. Schwartz sed ab illa lobis corollæ revolutis et cornu dorsali loborum coronæ interioris discedit.

Caules erecti vel adscendentes, quadranguli, 5—8 cm. longi, 18—22 mm. crassi, glauco-virides, dentibus conicis, acutis armati; flores solitarii ex parte apicale caulium producti; bracteae delto-ideae, 1 mm. longae; pedicelli teretes, glabri, virides, ca. 10 mm. longi, 2 mm. crassi; sepala anguste deltoidea, acuta, reflexa, 3—4 mm. longa; corolla campanulata, ca. 13 mm. longa, inter apices loborum 25 mm. ed expansa 35 mm. lata, a basi 5-fida, lobis elongatis, deltoideis, acutis, ascendentibus, parte apicale paulo deflexis, marginibus revolutis, extus glaucoviridis brunnea maculata, intus flavo-viridis, minute sed dense rubra maculata, glabra, dense papillis minutis induta, rubra marginata; columna staminalis 4 mm. alta; corona exterior 5 mm. diametro, cyathiformis, in saccis 5, basi rotundatis instructa, laete aurea, extus maculis rubris sparse induta; coronæ interioris lobi 1.7 mm. longi, 0.5 mm. lati, primum ascendentes deinde antheras arcte incumbentes sed non conniventes, cornu dorsali valido, extroverto, 1 mm. longo armati, aurei dense maculis rubris induti, apicem emarginati; fructus ca. 55 mm. longi, 7 mm. lati, lineari-lanceolati, apice acutiusculi, extus cani purpurei maculati.

TYPE LOCALITY : South Western Arabia, Western Aden Protectorate, Audhali Plateau on stony hills near the village of Mukeiras, alt. appr. 7,000 feet (2,100 metres), coll. C. Meintjes, Dec. 1961, fl. Bryanston, Johannesburg, 20 March, 1962, Lavranos 1657 (KEW, Holo-type).

Stems densely tufted, ascending-erect, 4-angled, 5—8 cm. long, 18—22 mm. thick including teeth, glaucous green with darker green and purplish brown spots, leafless; teeth stout, conical, acute, appr. 5 mm. long, spreading horizontally.

Flowers solitary from the upper portion of young stems, when in bud conical.

Bracts deltoid, 1 mm. long, mostly absent.

Pedicel terete, glabrous, green, 10 mm. long, 2 mm. thick but up to 4 mm. thick and marked with purplish brown when in fruit.

Sepals narrowly deltoid, acute, reflexed, 3—4 mm. long.

Corolla campanulate, lobed almost to the centre, appr. 13 mm. long, 25 mm. (when expanded 35 mm.) broad between apices of lobes; *tube* absent; *lobes* appr. 15 mm. long, 2 mm. (when expanded 4·5 mm.) broad at base, deltoid, elongate, gradually tapering to a rather acute apex, ascending-erect, the apical portion very slightly recurved, the margins strongly revolute; *outer surface* glabrous, glaucous green mottled with purplish brown; *inner surface* densely covered with minute conical papillae, not pubescent, greenish yellow with minute blood-red spots, more densely so in a transverse band towards the middle of the lobes, the margins of the lobes blood-red, the apices greenish yellow without spots.

Staminal column 4 mm. high.

Outer corona 5 mm. in diameter, consisting of 5 intergrown concave pouches, intensely golden-yellow with a few irregular blood-red markings on the outer surface, the margins entire.

Inner corona lobes 1·7 mm. long, 0·6 mm. broad, erect for appr. one-third of their length then bent abruptly and incumbent upon but not exceeding the anthers, not connivent, with deltoid, emarginate apices and a stout dorsal horn, 1 mm. long with truncate, emarginate apex, arising from the back of each lobe and spreading outwards, golden yellow, densely marked with minute, elongated, blood-red spots.

Follicles appr. 55 mm. long, 7 mm. broad, linear-lanceolate, somewhat flattened, tapering to a rather acute apex, glaucous-green with purplish spots.

In habit, *C. meintjesiana* appears to be closely allied to *C. chrysostephana* (Deflers) Berger, *C. luntii* N. E. Br. and *C. eremastrum* O. Schwartz, the first of which was collected within a distance of some 50 miles but at a much lower altitude, while the two others were described respectively from Dobaibah in the Hadhramaut and from Hadja in the mountains of the Northern Yemen. In the first two species, however, the corolla is pubescent and purple, at least in the upper portion of the lobes. In *C. eremastrum* the corolla is glabrous, apparently yellow, the lobes are flat, revolute only at their very apex, while it is not stated whether they are papillate or not.

With *C. luntii* and *C. eremastrum* our* species shares the feature, unique within the genus, of having a corolla lobed almost to the centre without a tube or even shallow depression at its base.

As in its three allied species, so in *C. meintjesiana* the corona is raised on a stout staminal column. It shares with them the characteristic outer corona which consists of 5 intergrown pouches which, in time, are filled with a sticky, honey-like substance. The corona is golden yellow as in *C. chrysostephana*, while in *C. luntii* it is dark purple.

The structure of the inner corona distinguishes our species from its allies. The inner corona lobes are adnate at the base to the outer corona at the sinuses between the 5 pouches. They are erect for one-third of their length, then bending abruptly inward, closely incumbent upon the anthers. They are not connivent at the centre. At the point where it bends, each lobe bears a stout dorsal horn, pointing outward and at an angle of some 25°, thus giving the inner corona a star-like appearance. This characteristic dorsal horn is not present in the other three related species.

C. meintjesiana, the three species above referred to, and *C. anemoniflora* (Defl.) Berger, appear to belong to a distinct section within the genus. While their habit of growth clearly distinguishes them from the other species in White and Sloane's *pauciflora-quadrangula* group, which do not sucker from the base, the corolla and the structure of the corona appear to differ sufficiently from those of the African *ango* group to allow, in due course, the creation of a new section to include them.

Caralluma plicatiloba Lavranos nov. sp., affinis *C. awdelianae* (Deflers) Berger sed caulibus brevioribus, pubescentibus, corolla pubescente, lobis corollae apicem replicatis et pilis vibratilibus munitis, forma loborum corollae exterioris differt.

Planta humilis, caespitoso-ramosa; caules erecti, obtuse quadranguli vel rarius 5-anguli, 2—10 cm. longi, 7—15 mm. (tenus 25 mm.) crassi, juniores glauco-virides et pubescentes, aetate canescentes et glabri, dentibus muniti rotundatis, cicatricibus foliorum delapsarum conspicuis; folia tenus 2.5 mm. longa, ovato-delhoidea, virida, mox decidua; flores 5—12, breviter pedicellati, in fasciculis lateralibus densis producti; bractee delhoideae, minutae; pedicelli ca. 2 mm. longi, teretes; sepala ovato-delhoidea, acutiuscula, 1.5 mm. longa; corolla campanulata, ca. 10 mm. longa, 15 mm. diametro, extus glabra, asperiuscula, flavo-viridis dense maculis minutis, brunneo-rubris induta, intus flava, minute pubescens, ubique maculis purpureis, convexis ornata; loborum apices purpurei; margines et summi apices loborum pilis simplicibus albescentibus, 1—1.5 mm. longis ubique sed sparse instructi; tubus 4 mm. longus, 5 mm. latus; lobi adscendentes, apicem paulo recurvi, expansi ovato-delhoidei, apice obtuso, breve bifido, parte inferiore convexuli deinde replicati; corona exterior cyathiformis, lobis fere a basin in segmenta duo linearea, acuta divis, aurantiaca, maculis rotundatis, purpureis induta; corollae interioris lobi supra antheras incumbentes, 1.1 mm. longi, 0.3 mm. lati, apice rotundati, aurantiaci, purpurei maculati; fructus 9 cm. longi, 7 mm. lati, anguste lanceolati, acutiusculi, virides.

TYPE LOCALITY: South Western Arabia, Western Aden Protectorate,

Audhali Plateau, on stony ground near the village of Mukeiras, alt. appr. 7,000 feet (2,100 metres), coll. C. Meintjes, 26 Dec., 1961, fl. Bryanston, Johannesburg, 11 April, 1962, Lavranos 1654 (KEW, Holotype). Also from Karish, Audhali Plateau, alt. appr. 7,500 feet (2,250 metres), coll. C. Meintjes, 26.12.1961, Lavranos 1655.

Plant succulent, freely branching and re-branching from a main stem, the lateral branches occasionally rooting when in contact with the soil.

Stems erect, 2—10 cm. long, 7—15 mm. (up to 25 mm.) in diameter and somewhat tapering, glaucous green and sparsely pubescent when young, greyish and glabrous with age, obtusely 4- (more rarely 5-) angled with rounded teeth bearing a whitish leaf-scar and a transverse groove above each tooth.

Leaves up to 2.5 mm. long, ovate-deltoid, green, soon deciduous.

Flowers 5—12 in sessile lateral umbels scattered along the upper part of young stems.

Bracts deltoid, minute, mostly absent.

Pedicel appr. 2 mm. long, terete.

Sepals narrowly deltoid, green, 1.5 mm. long.

Corolla campanulate, appr. 10 mm. long, 15 mm. in diameter; *outer surface* glabrous, somewhat rough, with a dark, somewhat raised median nerve on the back of each lobe, yellowish green, densely covered with minute brown-red spots; *inner surface* rich yellow in colour, minutely pubescent and marked with regularly spaced, often confluent, rounded, convex purple spots throughout, purple towards the apices of the lobes, the margins and apical portion of the lobes bearing white, purple-tipped, simple, vibratile hairs 1—1.5 mm. long; *tube* appr. 4 mm. long, 5 mm. broad at the mouth; *lobes* ascending-spreading and somewhat recurved towards the apex, when expanded ovate-deltoid tapering to a broad, shallowly bifid apex, somewhat convex in their lower half, thereafter becoming fully replicate with a rather irregular ridge.

Outer corona 2.5 mm. in diameter, cupular; lobes deeply bifid, the segments erect, linear-acute, 0.4 mm. long, orange-yellow, regularly marked with rounded, purple spots.

Inner corona lobes incumbent upon the anthers but not produced above them, linear, 1.1 mm. long, 0.3 mm. broad, their apices somewhat enlarged, rounded, entire, coloured as the outer corona.

Follicles 9 cm. long, 7 mm. broad, narrowly lanceolate, tapering to a rather acute apex, green.

C. plicatiloba is a close ally of *C. awdeliana* (Deflers) Berger which occurs at low altitudes in the country north-east of Aden as well as on Jebel Shamsan in the Aden Peninsula. From this latter species it differs, however, in being a considerably smaller plant the stems of which are



PLATE VII.

FIG. 1.—*Caralluma meintjesiana* Lavranos nov. sp. The type plant $\frac{3}{5}$ natural size.
(Photo: L. Louis.)



PLATE VII.

FIG. 2.—*Caralluma meintjesiana* Lavranos nov. sp. $\times 1\frac{1}{2}$ actual size.
(Photo: L. Louis.)

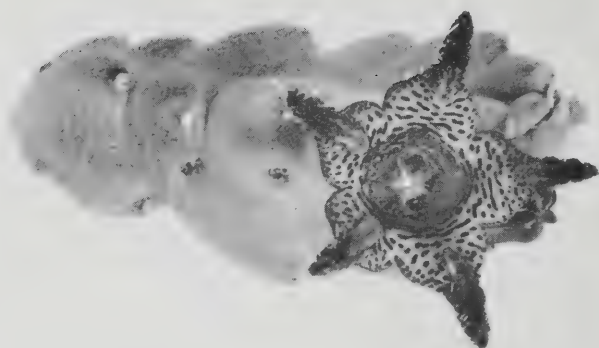


PLATE VIII.

FIG. 1.—*Caralluma plicatiloba* Lavranos nov. sp. Flowering stem $\times 3.0$.
(Photo: Division of Botany, Pretoria.)



PLATE VIII.

FIG. 2.—*Caralluma plicatiloba* Lavranos nov. sp. The type plant, natural size.
(Photo: Division of Botany, Pretoria.)

pubescent when young, a character very rare within the genus. The flowers are produced in umbels from the sides of young stems, whereas in *C. awdeliana* they are invariably borne at the apex of such stems. Moreover, in *C. awdeliana*, the corolla is glabrous, not ciliate at the margins, with a relatively longer tube, the lobes steeply ascending and revolute, not replicate as in our species. In *C. plicatiloba* the outer coronalobes are divided almost to the base into two linear, erect and not diverging segments. In *C. awdeliana* the inner corona lobes are deep purple.

While in the type plant the follicles are erect and straight, I have in cultivation another plant (Lavranos 1654*bis*) from the same locality, in which they are first diverging at an angle of 150° and thereafter decurved. This plant, which has not as yet flowered, appears, nevertheless, to belong to *C. plicatiloba* as, although more robust, it is virtually indistinguishable in its vegetative characters from that species.

These interesting new species were collected in December, 1961, by Mr. C. C. C. Meintjes, during an excursion to the Audhali Plateau (Kor al Audhilla) in the north-eastern part of the Western Aden Protectorate. They were found growing among rocks on hills in the immediate vicinity of the village of Mukeiras, near the Yemeni border.

Living material was sent to me together with many other interesting plants some of which, in particular one further species of *Caralluma* and two aloes, may prove to be new to science. The collections made by Mr. Meintjes also include known, but none the less interesting species such as, *inter alia*, *C. penicillata* (Defl.) N. E. Br., *C. quadrangula* (Forsk.) N. E. Br. and *Aloe sabaea* Schweinf.

Our plants flowered at Bryanston, Johannesburg, on the 20th March and on the 11th April, 1962, respectively, when the present article was compiled and the plants were photographed.

I am indebted to the Chief, Division of Botany, Pretoria, for his permission to use certain books belonging to the Division's library, for much valuable help and advice, and for the photographs of *C. plicatiloba* appearing herewith.

My appreciation for his valuable collections and tireless efforts is hereby expressed to Mr. Clyde Meintjes, after whom the first of these new species is named. The botanical exploration of Southern Arabia is still very incomplete so that the work done by Mr. Meintjes is of particular significance, especially so in view of the affinities of the tropical Arabian flora to that of the opposite shores of the Gulf of Aden, to students of the flora of Tropical Africa.

I also wish to thank Mr. Lionel Louis, of Johannesburg, for the photographs of *C. meintjesiana* which accompany this text.